upon a plurality of different formats into the processing step 205 to form the desired output video. Such video format information is preferably provided by way of user interface but can also be others. Additionally, the method inputs (step 213) audio format information based upon a plurality of different formats into the processing step 207 to form the desired output audio. Such audio format information is preferably provided by way of user interface but can also be others. Of course, one of ordinary skill in the art would recognize many other ways of inputting the format information for audio and video.

Although the above has been described in terms of a specific sequence of steps in one or more processes, it would be recognized that there could be many alternatives, variations, and modifications. For example, any of the above elements can be further separated or combined with each other or other elements. Preferably, the functionality of the above elements is carried out using computer software. Alternatively, some of the elements can be implemented in software or implemented in computer code in a combination of hardware and software. Alternatively, the above elements can be further integrated in computer code in hardware or software or implemented in computer code in hardware and software or the like. Depending upon the embodiment, further details of these steps are provided below according to the figures.

FIGS. 3A through 3C are more detailed diagrams of video input processes 300, 320, 340 according to embodiments of the present invention. These diagrams are merely examples, which should not unduly limit the scope of the claims herein. One of ordinary skill in the art would recognize many other limitations, variations, and modifications. As shown, any type or almost any type of video information can be input into the present method. Referring to FIG. 3A, the method inputs a video file 301. In a specific embodiment, the video file can be an AVI file, a QuickTime file, a Windows Media file, any combination of these, and others. The method reads the video file, step 303, to determine the type of file and format information. Depending upon the type of file and format information, the method decodes the video information, step 305. The decoded video information output (step 307) in an elementary or raw format such as RGB, YUV, and others. Audio information is also derived and separated from the video information, as shown by reference numeral 309.

In an alternative embodiment, the method includes providing captured video 321 and captured audio information 323. The captured video can be captured from any video capturing device. The video capturing device can include, among others, a video capture card connected to the bus of the computer, a USB video capture device. The video capturing device receives the video information from any analog video source, for example, a camcorder, a VCR, TV antenna, or others. The video capturing device digitizes the analog video information in a uncompressed raw video format. The audio capturing is provided using an audio capture device. The audio capture device can include, among others, a audio capture card connected to the bus of the computer, a USB audio capture device. The audio capturing device receives audio information from any audio source, for example, a camcorder, a VCR, TV antenna, microphone, or others. The audio capturing device digitizes the analog audio information in a uncompressed audio format. As merely an example, the captured video can be from a camera such as those manufactured by Sony, Panasonic, and others, as illustrated by reference numerals 322 and 324, respectively, for video and audio.

The method processes (step 325) the captured video information and also processes (step 327) the captured audio information. Preferably, the captured video information is processed by way of decoding to an elementary or raw video form 329 (e.g., uncompressed). The raw video form can include RGB, YUV, and others. The captured audio information is also processed by way of decoding to an elementary and/or uncompressed audio format, which includes PCM 331 (e.g., Pulse Code Modulation). The raw video and audio are outputted respectively to the next process steps without any intermediary files in preferred embodiments.

Alternatively, the method captures video information 341 using a digital video ("DV") capturing device, such as a high speed serial bus commonly called IEEE 1394. The high speed bus can be used to capture both audio and video information. The captured video and audio information processed 343 using the capturing device. The processed information is then processed through a decoding process 345, which yields an uncompressed or elementary or raw video 347 information and audio 349 information. Of course, one of ordinary skill in the art would recognize many other alternatives, variations, and modifications.

FIG. 4 is a more detailed diagram of a resizing and adjustment process 400 according to an embodiment of the present invention. This diagram is merely an example, which should not unduly limit the scope of the claims herein. One of ordinary skill in the art would recognize many other limitations, variations, and modifications. As shown, video information in an elementary or raw form is derived from a prior process, step 401. The method resizes the video information to a desired output format and a desired TV standard. As merely an example, the desired output format and TV standard are provided by user inputs. Such user inputs can be selected by way of a custom graphical user interface, which is coupled to the present method. As merely an example, selected sizes are provided according to Table 1.

TABLE 1

Media Format\ TV Standard	(National Television System Committee) NTSC Standard	(Phase Alternate Lines) PAL
DVD	720 × 480	720 × 576
	352 × 480	352 × 576
	352 × 240	352 × 288
VCD	352 × 240	352 × 288
Super VCD	480 × 480	480 × 576

As can be seen, the media format can be DVD, VCD, or Super VCD, among others. Depending upon the embodiment, DVD can include sizes of those noted above, and may also include others for NTSC and PAL. In alternative embodiments, VCD can include sizes as noted above for NTSC and PAL. Still further, Super VCD can include sizes as noted above for NTSC and PAL. Preferably, the media format and TV standard are provided by way of user input (step 402). Of course, there may also be other variations, modifications, and alternatives, depending upon the embodiment. Additionally, other types of display sizes can also be used depending upon the embodiment.

The method also adjusts (step 405) a frame rate of the video information. Depending upon the embodiment, NTSC includes a frame rate of 29.97 Vertical Frame Frequency and PAL includes a Vertical Frame Frequency of 25. The frame rate is adjusted in a separate process from the sizing step, which has been described. Alternatively, the frame rate can be adjusted in other ways, depending upon the specific embodiment. Outgoing video information, which has been sized and framed, exits the process, as provided by reference numeral 407.

The method also processes 500 audio information as illustrated in the simplified diagram of FIG. 5. This diagram is merely an example, which should not unduly limit the scope of the claims herein. One of ordinary skill in the art would recognize many other limitations, variations, and modifications. As shown, the method inputs uncompressed audio information 501, which is derived from a prior process, such as the one noted above, but can be others. In a specific embodiment, the method includes a step of adjusting a frequency of the audio information according to a desired output format. As merely an example, the desired format can be found in Table 2.

TABLE 2

Media Format/Information	Format	Frequency
DVD	Uncompressed AC-3 MEPG-1 Layer 2 Audio	48 kHz
VCD	MPEG 1 Layer 2 Audio	44.1 kHz
Super VCD	MPEG 1 Layer 2 Audio	44.1 khz

As can be seen, the media format can be DVD, VCD, or Super VCD, among others. Depending upon the embodiment, the DVD format often uses a 48 kHz frequency rate. Alternatively, the VCD format often uses a 44.1 kHz frequency rate. As can be seen, the DVD and VCD uses MPEG 1 layer 2 Audio. Regardless of the final audio format, the audio is first converted to the desired frequency in this step. The adjusted audio is outputted to the next process, step 505. Preferably, the media format is provided by way of user input (step 502). Of course, there may also be other variations, modifications, and alternatives, depending upon the embodiment.

FIG. 6 is a more detailed diagram of a conversion process 600 according to an embodiment of the present invention. This diagram is merely an example, which should not unduly limit the scope of the claims herein. One of ordinary skill in the art would recognize many other limitations, variations, and modifications. Preferably, the method converts the raw video into a compressed elementary video, which is multiplexed with audio, to form an outgoing audio/video stream. The method receives uncompressed video 601 and encodes (step 605) such uncompressed video to from an elementary stream of video. Optionally, the method receives uncompressed audio and processes the audio using an encoding process (step 607) to form an elementary stream of audio information, which can be MPEG1 Layer 2 audio, AC-3 audio, among others. The elementary stream of audio information and the elementary stream of video information are multiplexed, step 609. The outgoing stream 611 is the multiplexed audio/video information. The outgoing stream can be in a variety of formats such as DVD, VCD, and Super VCD, among others.

Although the above has been described in terms of a specific sequence of steps in one or more processes, it would be recognized that there could be many alternatives, variations, and modifications. For example, any of the above elements can be further separated or combined with each other or other elements. Preferably, the functionality of the above elements is carried out using computer software. Alternatively, some of the elements can be implemented in software or implemented in computer code in a combination of hardware and software. Alternatively, the above elements can be further integrated in computer code in hardware or software or implemented in computer code in hardware and software or the like. Of course, the particular method will depend highly upon the application.

In an alternative embodiment, a method for adding video editing elements to the present invention can be outlined as follows:

1. Initiate conversion process;
2. Input video information;
3. Input video and audio media format information and TV standard;
4. Convert input video into uncompressed raw video;
5. Transfer uncompressed raw video without any intermediary files;
6. Process raw video to desired output format and TV standard based upon the inputted media format and TV standard;
7. Process audio information to desired output format based upon user input;
8. Transfer video and audio in desired formats with any intermediary files;
9. Perform editing process on the processed video in the desired output format and TV standard based upon selected user input;
10. Perform editing process on audio in desired output format based upon selected user input;
11. Form desired audio/video output; and
12 Perform other steps, as desired.

As shown, the method performs a sequence of steps to convert video information into a desired format without any intermediary files of conventional techniques. Preferably, the video information can be in almost any format or any format. The output video information can also be in any desired format, depending upon the embodiment. Preferably, editing features are also included. These and other features of the present method can be found throughout the specification and more particularly according to the figures below.

FIG. 7 is a simplified diagram of a digital video processing method 700 including an editing method according to an embodiment of the present invention. This diagram is merely an example, which should not unduly limit the scope of the claims herein. One of ordinary skill in the art would recognize many other limitations, variations, and modifications. As shown, the method begins at start, step 702. The method first inputs video information (not shown). The video information can be in almost any format or any format. The method initiates a conversion process (step 701) of the video information from an incoming format to a raw video format. The raw video format is often RGB, YUV, or others. Preferably, the conventional process includes a decoding process. The method also separates audio information, if available, from the video information.

The method transfers the raw video raw video without any intermediary files to a resizing and framing process or processes, step 703. Here, the method directly resizes the raw video information in the uncompressed format into a size associated with the desired output media format and the desired TV standard. The method also directly adjusts the uncompressed format in the size associated with the desired output media format and the desired TV standard to a frame rate associated with the desired TV standard. The method processes the uncompressed format in the size and the frame rate into an elementary video stream. The method also processes the audio information (step 705) into a desired output format. Preferably, the method uses one or more encoding processes. The encoding process can form a desired output such as DVD, VCD, and others.

Next, the method transfers the video and audio information in desired formats with any intermediary files in preferred embodiments. Preferably, the method includes a video editing process (step 707) to the video information. The editing process can be selected from fade, wipe, scroll, and others. Preferably, the method also includes a audio editing process (step 709) to the audio information. As merely an example, the audio editing process can include mixing with additional audio, fade, and others. The editing process is often input (step 704) by way of user input. The user input is provided through a graphical user interface. One of ordinary skill in the art would recognize many other limitations, variations, and modifications. The method forms the desired audio/video output (step 711) using at least a multiplexing process, which combines audio and video information together. The method stops at step 713. Although the above has been described in terms of a specific sequence of steps in one or more processes, it would be recognized that there could be many alternatives, variations, and modifications. For example, any of the above elements can be further separated or combined with each other or other elements. Preferably, the functionality of the above elements is carried out using computer software. Alternatively, some of the elements can be implemented in software or implemented in computer code in a combination of hardware and software. Alternatively, the above elements can be further integrated in computer code in hardware or software or implemented in computer code in hardware and software or the like. As merely an example, hardware used according to the present invention is provided in more detail below.

FIG. 8 is a simplified diagram of system hardware 800 according to an embodiment of the present invention. This diagram is merely an example, which should not unduly limit the scope of the claims herein. One of ordinary skill in the art would recognize many other limitations, variations, and modifications. The system 800 includes a monitor 810, a computing system 820, a user input device 830, a network interface 840, and a keyboard 850. Computing system 820 preferably includes familiar components such as a processor 860, and memory storage devices, such as a random access memory (RAM) 870, a fixed disk drive 880, and a system bus 890 interconnecting the above components. User input device 830 may include a mouse, a trackball, a keyboard, a keypad, a joystick, a digitizing tablet, a wireless controller, a microphone, or other input devices.

Random access memory 870 and fixed disk drive 880 are mere examples of tangible media for storage of computer programs, e-mail messages, audio and/or video data, e-mail client programs, and code implementing embodiments of the present invention. Other types of tangible media include SRAM, floppy disks, optical storage media such as CD-ROMs and bar codes, semiconductor memories such as flash memories, read-only-memories (ROMs), ASICs, battery-backed volatile memories, and the like.

Network interface 840 may be any type of interface to a computer network. For example network interface 840 may be a modem, an Ethernet or fast Ethernet interface, a LocalTalk connection, a satellite or other wireless connection, or the like. As disclosed above, the computer network may be any type of network such as the Internet, an Intranet, an IPX network, private tunnel, local area network (LAN), WAN, and the like.

In a preferred embodiment, computing system 820 includes a '586 class microprocessor running Windows2000TM. operating system from Microsoft Corporation of Redmond, Wash. Many other computer systems, such as MacOSTM from Apple Corporation, running upon G3 based microprocessors, or SolarisTM from Sun Microsystems or UNIX running upon a SPARCstation, and the like can also be used. The system above discloses examples of configurations that embody the present invention. It will be readily apparent to one of ordinary skill in the art that many system types, configurations, and combinations of the above devices are suitable for use in light of the present disclosure. Of course, the types of system elements used depend highly upon the application.

Computer software codes to carry out the functionality herein are provided in one or more memories.

It is also understood that the examples and embodiments described herein are for illustrative purposes only and that various modifications or changes in light thereof will be suggested to persons skilled in the art and are to be included within the spirit and purview of this application and scope of the appended claims.

What is claimed is:

1. A system for converting video information from an incoming format to an outgoing format using an integrated computer software application, the integrated computer software application being provided on one or more memories, the one or more memories including:

a code directed to receiving video information in a first format;

a code directed to receiving a desired output media format based upon a first input;

a code directed to receiving a desired TV standard based upon a second input;

a code directed to converting the video information in the first format to raw video information an uncompressed format using a decoding process;

a code directed to resizing the raw video information in the uncompressed format into a size associated with the desired output media format and the desired TV standard;

a code directed to adjusting the uncompressed format in the size associated with the desired output media format and the desired TV standard to a frame rate associated with the desired TV standard;

a code directed to processing the uncompressed format in the size and the frame rate into an elementary video stream; and

a code directed to processing the elementary video stream with audio information in the desired output media format and the desired TV standard to form video and audio information in a presentation format based upon the desired output media format and the desired TV standard.

2. The system of claim 1 wherein the first format is selected from a group consisting of: a digital file, a digital captured video stream, an analog captured video stream, and an internet video stream.

3. The system of claim 2 wherein the digital file is selected from a group consisting of: an AVI format an MPEG format, a DV format, a QuickTime format, Real Video format, Windows Media Player format.

4. The system of claim 1 wherein the uncompressed format is selected from a group consisting of: RGB, and YUV.

5. The system of claim 1 wherein the desired output media format is selected from a group consisting of: DVD, VCD, and Super VCD.

6. The system of claim 5 further comprising a code directed to inputting a quality setting based upon a third input when the desired output media format is DVD.

7. The system of claim 1 further comprising writing the video and audio information in the presentation format onto a disk media.

8. The system of claim 1 wherein the presentation format is selected from a group consisting of: VOB(Video Object for DVD), VCD MPEG1, and SuperVCD MPEG2.

9. The system of claim 1 wherein the code directed to processing of the elementary video stream with audio information comprises a code directed to perform a multiplexing process.

10. The system of claim 1 wherein the audio information is tuned to a desired frequency based upon the desired output media format.

11. The system of claim 10 wherein the desired frequency is selected from a group consisting of: 48 kHz for DVD, 44.1 kHz for VCD and SVCD.

12. The system of claim 1 wherein the codes directed to converting, resizing, and adjusting, and processing are codes directed to be performed free from one or more intermediary files.

13. The system of claim 1 further comprising a code directed to processing the raw video information based upon video editing information based upon user input.

14. The system of claim 1 further comprising a code directed to processing the audio information based upon audio editing information based upon user input.

15. The system of claim 1 wherein the code directed to processing into the elementary video stream is provided in code directed to an encoding process and the code directed to converting into the raw video information is provided in code directed to a decoding process.

16. The system of claim 1 further comprising a code directed to receiving video editing information based upon a third input.

17. The system of claim 16 further comprising a code directed to receiving audio editing information based upon a fourth input.

18. The system of claim 16 wherein the integrated computer software application is a single integrated application.

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